Improving Medical Performance

(Lean thinking & Error prevention in Health care)

Lecture 9

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LEAN

It's extremely popular now in healthcare as well, because it has a general focus on emphasizing waste reduction and streamlining processes in organizations

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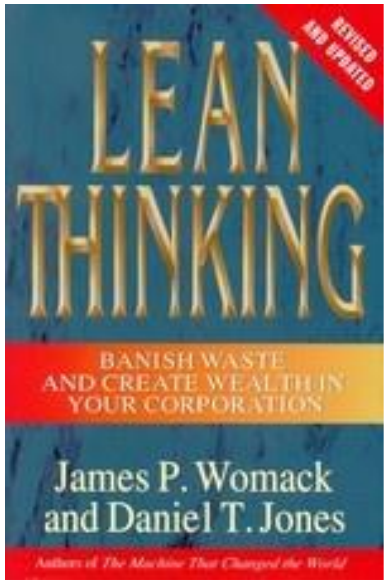
Principles of LEAN Thinking

1. Specify **value** in the eyes of the customer.
2. Identify the **value stream** and eliminate **waste**
3. Make value **flow** at the pull of the customer.
4. **Involve** and Empower employees
5. **Continuously** improve in the pursuit of **perfection**.



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Lean Requires a Cultural Shift

- Traditional Approach:
  - "Naming, Shaming, and Blaming"

- Lean Approach:
  - Supports open reporting of mistakes
  - Root cause problem solving process
  - "Anyone can make mistakes"

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Lab.

Laundry

OR

Go To Gemba

ER

Kitchen

Inventory

“ Actual Workplace OR Real place”

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Kaizen

Continuous Incremental improvement

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E^2

EVERYONE / EVERYDAY

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What is True North?

- **The right direction to a never-ending journey of improvement**
- **Continuously aiming for:**
  - **Less strain and overburden (Easier)**
  - **Safer with higher quality (Better)**
  - **Less waiting (Faster)**
  - **Lower cost (Cheaper)**

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The Lean Approach

Traditional improvements focus here

Typical Process

Lean focuses here!

Focus of traditional improvements:

- Work Longer
- Work Harder
- Add People
- Add Equipment
- Add Space

A strategy for "getting better, using less"

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8 Wastes of Lean

Waiting
people or product waiting for processes or workers

Unused Human Talent
wasted knowledge, skills and abilities

Inventory
storage of material, information or parts

Defects
product or service that contains errors or requires rework

Transportation
conveyance of people, materials or goods

Motion
unnecessary human movement, searching, reaching, lifting

Processing Waste
extra steps, checks and workarounds

Overproduction
doing more than is needed now

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3 Mu's :

- **Muda (Waste)**
  - **Waste**
  - **Adds no value to the customer**
- **Muri (Strain)**
  - **Strain/Overburden**
  - **Can be on operators or machines**
- **Mura (Inconsistency)**
  - **Inconsistency in a process (e.g. quarterly reports, batching)**
  - **Inconsistency in an operation (i.e. task) (e.g. non-standard work)**

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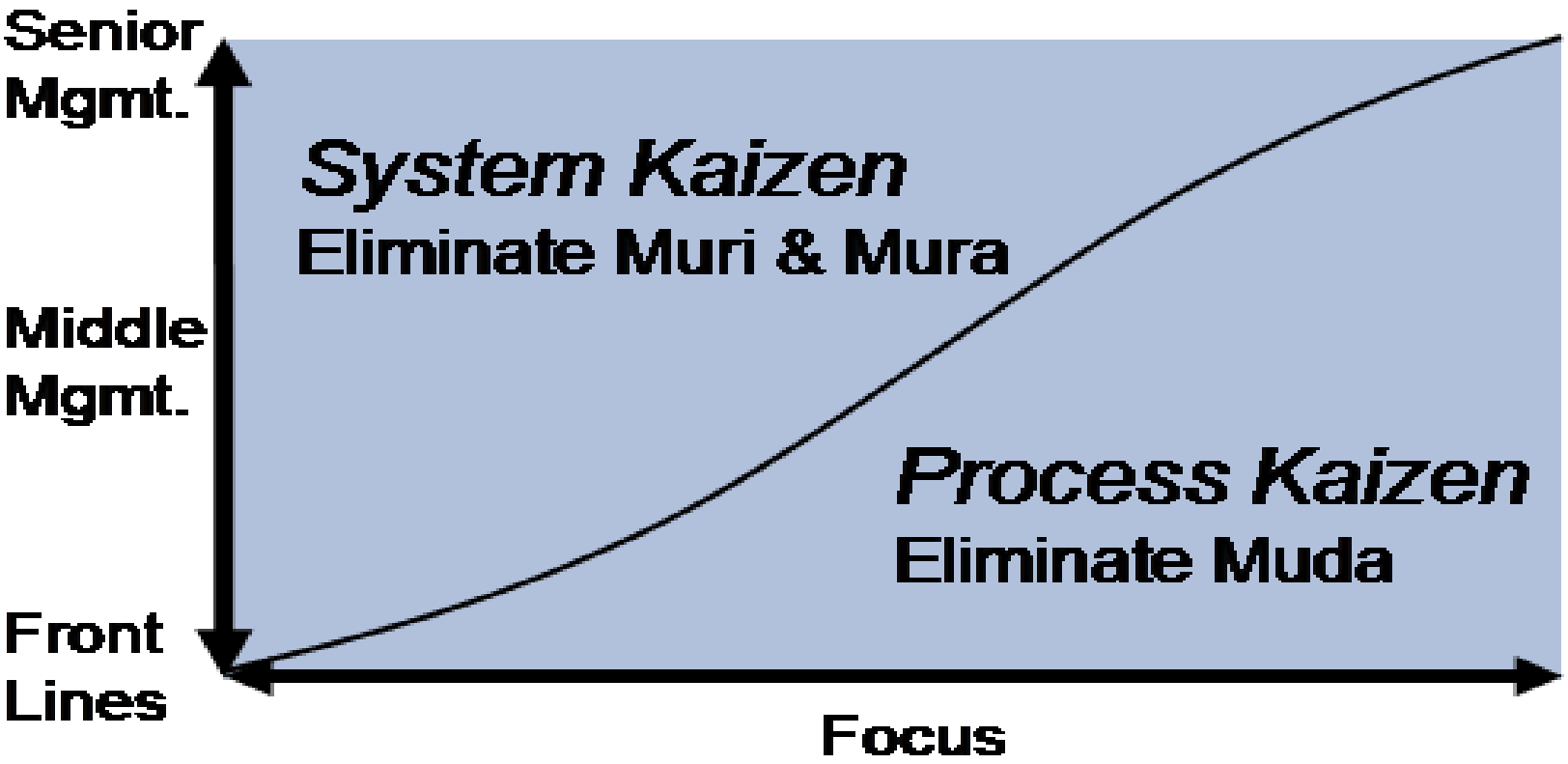
System vs. Process Kaizen

Kaizen involves everyone, everyday at all levels



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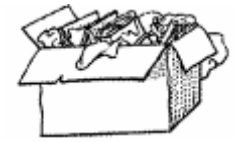
5S Workplace Organization

Before 5S

S1: Sort
(Seiri)

Not Needed

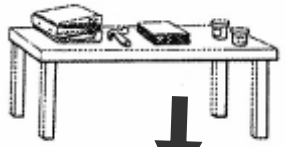


(Red Tagged)

Remove from Workplace

Discard after a defined time

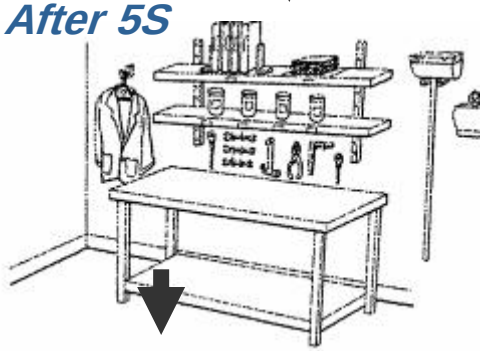
Needed



Create Visual Workplace

- **S2: Set In Order (Seiton)**
- **S3: Shine (Seiso)**
- **S4: Simplify & standardize (Sieketsu)**

After 5S



-S5: Sustain (Shitsuke)

A place for everything and everything in its place (PEEP)

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Additional S's:

Safety
Security
Satisfaction

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Waste Walk Gemba Worksheet

Waste Walk Gemba Worksheet

Location: _____

Start: : AM PM

End: : AM PM

Wastes Observed:

1. _____

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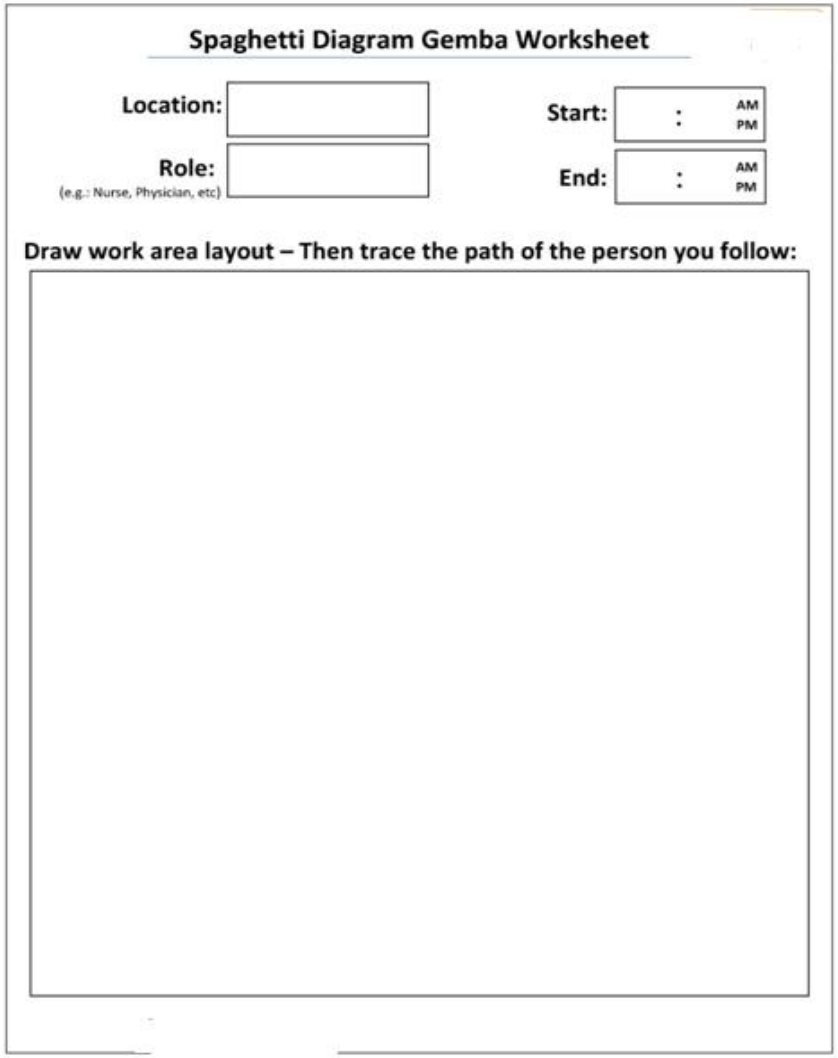
Spaghetti Diagram Gemba Worksheet



Spaghetti Diagram Gemba Worksheet

Location: _____ **Start:** : AM PM

Role: (e.g.: Nurse, Physician, etc) _____ **End:** : AM PM

Draw work area layout – Then trace the path of the person you follow:

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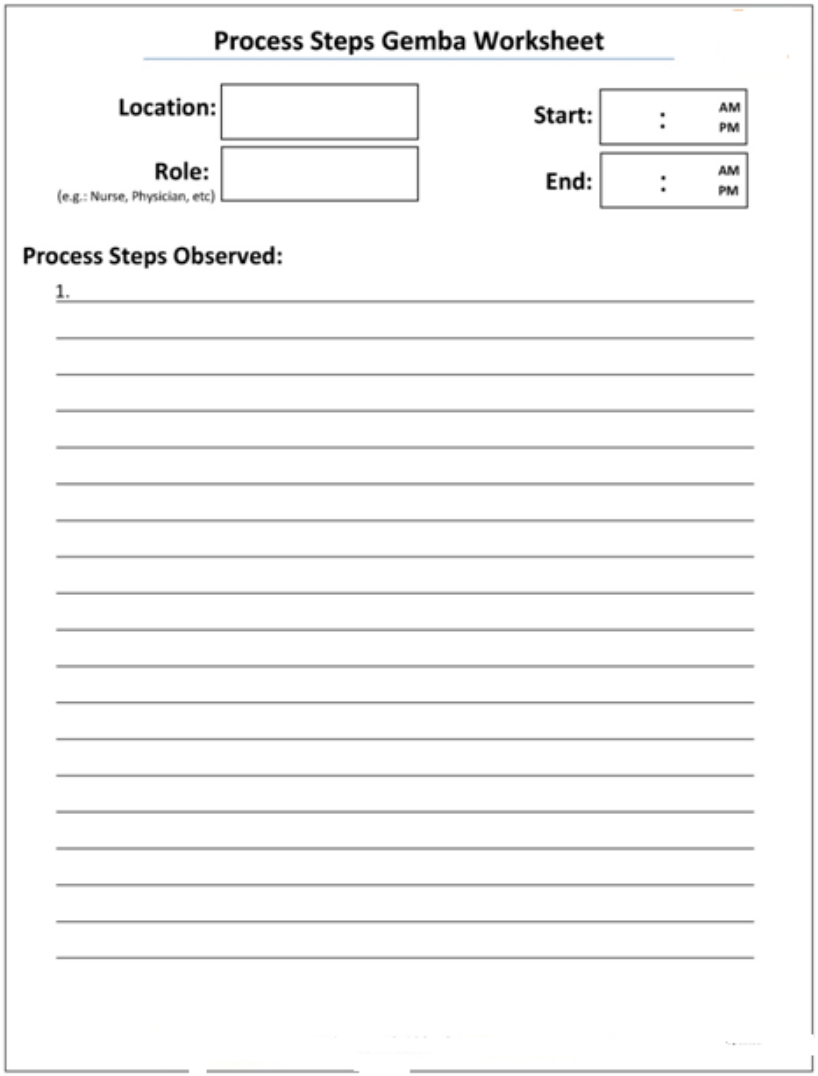
Process Map Gemba Worksheet



Process Steps Gemba Worksheet

Location: _____ **Start:** : AM PM

Role: (e.g.: Nurse, Physician, etc) _____ **End:** : AM PM

Process Steps Observed:

1.

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One Page Exercise :

Q 1 :

Define :

- Gemba,
- Kaizen,
- True North,
- E2,
- 8 wastes
- 5 S's
- Extra S's

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What do our Patients need?

- Favorable patient outcomes
- Patient safety
- Implement new procedures and capabilities
- Slow rising healthcare costs

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LSS in Healthcare

- **Includes a variety of improvement tools:**
  - 8 kinds of wastes
  - Flowcharting or process mapping
  - 5S's
  - Changeover reduction
  - Constraint Management
  - Rapid Improvement Events
  - Quick and Easy Kaizen
  - Gemba

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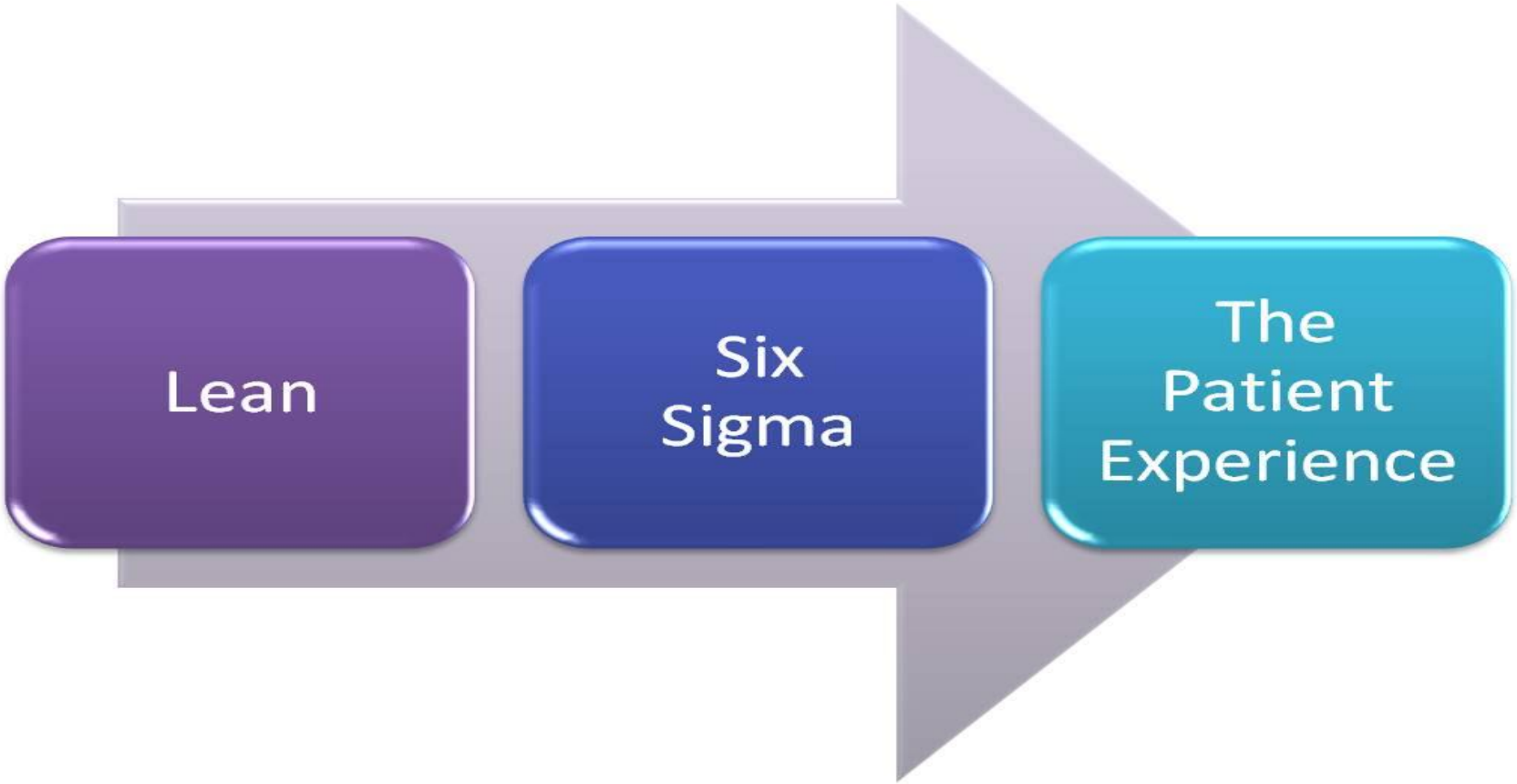
LSS



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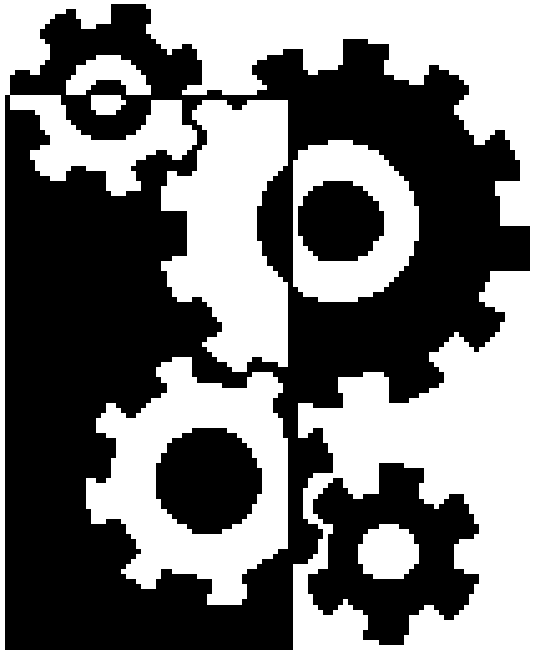
What is a Lean Hospital?

ED

Housekeeping

Physicians



Food Service

Pharmacy

Surgery

Cath Lab

Radiology

Nursing Units

Staff

It all works together without waste

R&D

Materials Management

HIM

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Mistake Proofing

To determine methods that will ensure that a process will not allow defects.

Mistake proofing ensures that tasks can only be done the right way

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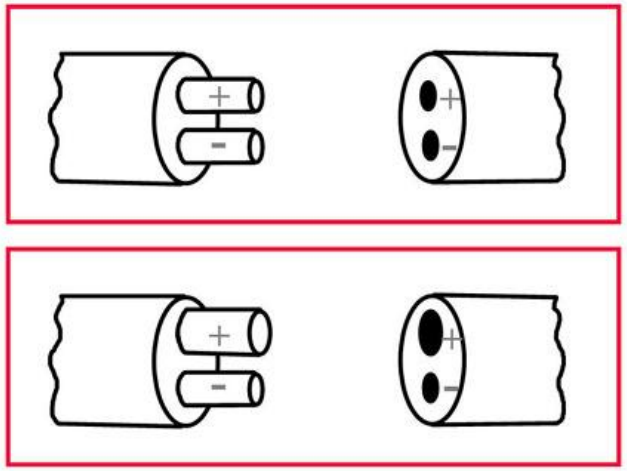
POKA – YOKE (Shingo 1981)

MISTAKE PROOFING

- Prevention of error by individual action
- The old term was “ baka- yoke “ = prevention of Foolish action



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Healthcare Error Prevention

1- Personalization

The patient may begin to think ; if the hospital is cutting corners in the reception area , where else are corners to be cut ?

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Healthcare Error Prevention

2- Buildings

In hospitals, you should have effective

SIGNAGA

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Healthcare Error Prevention

3- Training for the exceptional events

- Using Simulators & computerized mannequins
- Carrying out Disaster Drills

4-Repetition

- Healthcare practitioners , as a rule , do many things, even complicated ones, from memory rather than using a checklist (SSCL)

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Healthcare Error Prevention

5- **Keying & Interlocks** (Fire Hydrants)

6- **Kitting** (Gall balder kit, appendectomy kit,…… = kits are inventory) BUT when needed.

7- **Computer Displays** should make right thing easier .

8- **Fatigue** ..tired people (Physical & Mental) make mistakes.

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Healthcare Error Prevention

9- **Essential equipment**..should have sufficient backups on standby .

10- **Status of Work**..putting x-ray into viewer in a reversed position .

11- **patient location**.. Is patient is in bed or out

12- **Patient Identification.**

13- Building & Infrastructure ..fire, quarantine , isolation zones + Electricity Backup + Communication systems + Data Network…… .

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Healthcare Error Prevention

14- **Medications**.. Comp. Physician's orders , Comp. Double-checking & Bar-coding .

15- **The Tell-Tale**.. Before & After photographs.

16- **Employee security**..The rate of assaults on healthcare workers is FIVE TIMES as high as that on workers in general, and injuries and deaths do occur (Gribbin 2002)

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WORKFLOW

- The success is the rate at which treatments are successfully completed .
- Poor workflow leads to stagnation & higher treatment cost for the same number of patients .

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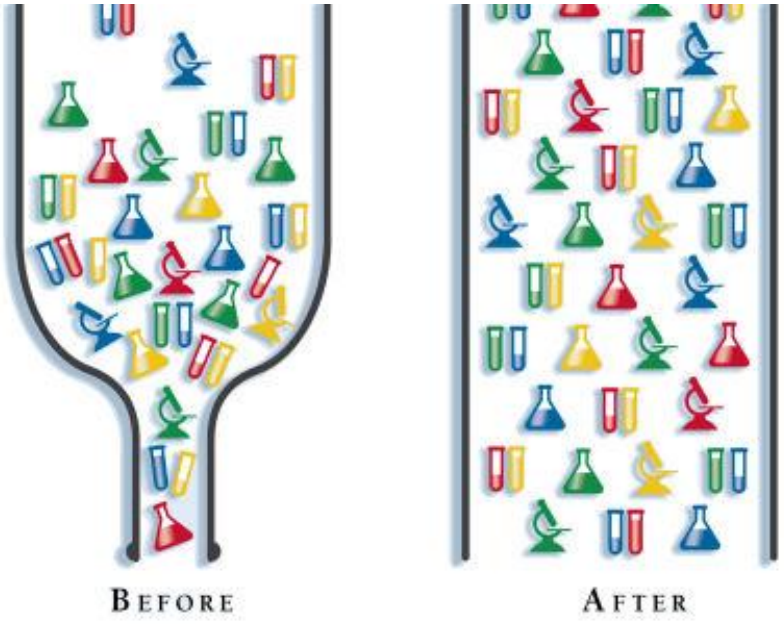
WORKFLOW

- Recognizing which hospital processes are bottleneck or non- bottleneck is the first step to improve workflow .



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WORKFLOW

Bottleneck

Upstream

Downstream

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WORKFLOW

- **Dental Clinic : (Bottleneck) :**

The standard Dental treatment time is 20 minutes

- **Reception clerk : (Upstream) :**

The standard reception processing time is 5 minutes (Should be IDLE 15 minutes)

- **Discharge clerk : (Downstream) :**

The standard discharge processing time is 5 minutes (Should be IDLE 15 minutes)

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The Japanese decided that the right way to run a factory is :

“ To keep the work flows continuously through the factory bottleneck and to keep the workers upstream of the bottleneck idle until authorized to produce work to flow into the bottleneck…… it works for factories as well as dental clinics. “

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The Essence of Production Theory :

1- **The production of the bottleneck** is the production of the organization;

2- **Production upstream** the bottleneck should be on-demand and idle until demand arises;

3- **Production downstream** the bottleneck should be idle until work comes to it from bottleneck .

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Why is there a bottleneck ?

- A bottleneck exists because the cost of expanding the bottleneck is so great as to be prohibitive .
- In healthcare bottlenecks may be created by regulations as a limit of the number of beds or by the size of the facility.
- If there is more number of physicians than needed by patients; you should reduce the capacity until the bottleneck occurs again

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Management at the bottleneck

The operational focus is on making sure the bottleneck equipment is in order, all supplies are on hands , the staff are trained up to high standards , the patient is double checked , all medical records are double-checked and even making up a bed .

The right place to have a bottleneck is at the first step of the process

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Management upstream the bottleneck

The focus upstream of the bottleneck is on making sure that the patient is ready to go to the bottleneck when the bottleneck is ready for the patient

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Management downstream the bottleneck

Downstream the bottleneck, there is nothing to do except dealing with patient immediately after leaving the bottleneck

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Managing the Workflow

1- Identify bottleneck and apply maximum –net-production-management to the bottleneck activity .

2- Identify upstream bottleneck and apply idle-until-called-on management rules to the upstream activity .

3- Identify downstream bottleneck and apply idle-until-work-arrives management rules to the downstream activity .

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Kanban

看板 – Kanban literally means :

"visual card," "signboard," or "billboard."

- Toyota originally used Kanban cards to limit the amount of inventory tied up in "work in progress" on a manufacturing floor
- Not only is excess inventory waste, time spent producing it is time that could be expended elsewhere

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Kanban Boards

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The Kinds of waits

1- **Queuing** : Waiting for service

2- **Pending** : waiting for administrative release

3- **Patching** : Intentional grouping of patients or other work so that one setup can be used several times **(The best for patient is Patch Of ONE)**

4- **Bunching** : Unintentional grouping of patients or other work

5- **Hanging up** : waiting while some parallel process is completed .

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Informal assignment 10
(to be sent by MAIL ONLY+ Individual)

Please Read & Demonstrate Briefly :

1. Strategic Planning for Healthcare
2. Leadership
3. Managed Care System
4. Credentialing & Privileging
5. Clinical practice guidelines
6. Clinical pathway

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